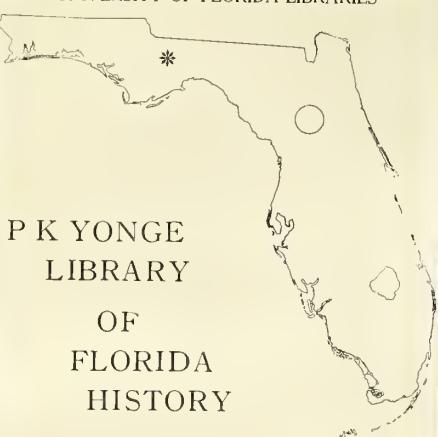


James A. Robertson

Some Notes on the Transfer  
by Spain of Plants and  
Animals to its Colonies  
Overseas

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A line drawing map of the state of Florida. A small black asterisk (\*) is placed near the northern coast. A small black circle is placed near the central coast, roughly halfway between the star and the southern tip. The map shows the outline of the state and its major coastal features.

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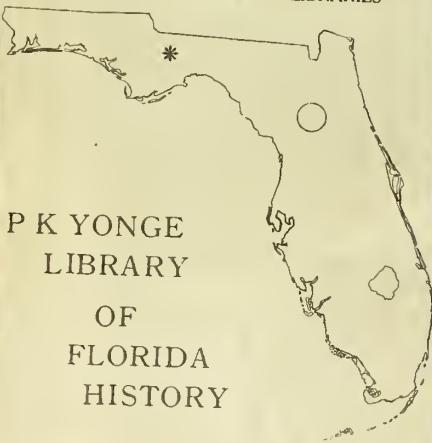
Some Notes on the Transfer by Spain  
of Plants and Animals to its Colonies Overseas

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JAMES SPRUNT HISTORICAL STUDIES

18-20

CHAPEL HILL 1926-28

1. Some Notes On the Transfer By Spain of Plants And  
Animals To Its Colonies Overseas.

By: James A. Robertson.

"Very extraordinary", says the good Jesuit father, Bernabe Cobo, writing in 1652, "is the abundance of the increase in this New World of all the animals, fruits, vegetables, and all manner of plants which the Spaniards have taken to it since they discovered and settled it." So true was this, continues the same author, that some people doubted that certain things had been transferred from Spain at all, but declared them native to the new lands. A residence of forty years in America, however, and an acquaintance with old men who remembered when certain European animals and plants were not to be found in the Indies, or who remembered, even, when some of them were first brought over, gave Cobo a right to speak with a certain authority on the matter. Induced by friends or officials, the observant Jesuit had the prescience to write down what he knew of the bringing of new forms of life to the Indies, and his chapters on this subject are valuable testimony.

But Cobo, although he will be used largely in this paper, is not the only authority on this phase of Spain's constructive labors in the colonies. Others--and some much earlier than he ---left partial record of animal and plant transfer to and from



James Sprunt Historical Studies, Cont'd.

the Indies, among them Cortes, the conqueror, Oviedo, the official, Acosta, the Jesuit (whose books have run into many editions), Herrera, the chronologist, Solorzano, the jurist, and many others. It might be of some little interest to note here something of what various of these writers have said regarding the matter, restricting ourselves at this time to transfers to the colonies. Even a slight study shows that Spaniards thought of other things beside gold and precious stones, and that among the early explorers, discoverers, officials, and others were persons with a large outlook and some with a scientific type of mind--largely untrained though they may have been in the exact tenets of science. Thus, we find the great pioneer Cortes writing!

"I assure your Caesarian Majesty that, could we but obtain plants and seeds from Spain, and if your Highness would be pleased to order them sent to us....the ability of these natives in cultivating the soil and making plantations would very shortly produce such abundance that great profit would accrue to the Imperial Crown of your Highness;.....

This paper must be taken merely as an introduction to a more ambitious work which I hope to undertake some day. Readers must be charitable if the information be thin at times and of a somewhat "hearsay" character. A work of this nature, to be complete, needs the testimony of botanists and other scientists and a minute sifting of all sources. It must be premised also that the early writers, being human, and living in an age when exact observation was not



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regarded so necessary, perhaps, as now, were not always immune from error; so that one must check up their assertions from as many sources as possible. Connizance must also be taken of the fact that the Spaniards sometimes transferred animals or plants into their colonies which were already to be found there. A notable instance of this was the transfer of horses to the Philippine Islands, although the Chinese horse had long been known there. In a sense, these were, however, real transfers, especially in the case of plants, for in more than one instance, the European variety thrived better than the indigenous, or enriched it. With these warnings, we are ready to begin our examination of the evidence, without claiming in any way to be exhaustive and without claiming, even, to present the best evidence. This paper must be regarded merely as composed of notes that may be useful in the writing of a more definitive article on the subject of animal and plant transfers.

Cobo's evidence is especially interesting and valuable. He states that he does not know in all instances by whom introductions were made into each province; yet he remarks the problem is not a very difficult one, for most products were taken first to Isla Espanola, whence they were transferred to other regions. It is true, however, as he says, that some products were taken to other parts without passing through Isla Espanola first. Since his acquaintance was more intimate with Peru than any other region, it is not surprising that he confines himself more especially to that country.



James Sprunt Historical Studies, Cont'd.

On his very first voyage, Columbus noted the lack of European fruits, vegetables, grains, and animals. Accordingly, on his second voyage, he carried animals for breeding purposes, besides seeds and slips of plants. Later expeditions did the same thing, so that, says Cobo, "there are very few plants of all the kinds grown in Europe which have not been transferred to this land." And he makes the sage observation that the transfer of animals and plants has been more advantageous to the New World than the immense wealth of gold and silver sent thence to Spain. One may predict, he continues, that every Spanish plant will thrive in the New World. One potent cause for the great increase in plants and trees has been the destruction and change of site of many Spanish and Indian settlements. Abandoned by their inhabitants, gardens have run riot, while cattle reverting to a wild state, have continued to breed and have formed immense herds. Soldiers on entering a ruined city in Chile found veritable groves of various kinds of fruit trees, which bore excellent fruit. The Indians once destroyed a Spanish settlement in the valley of Neyva, situated between Peru and the Nuevo Reino de Granada. They left some of the cattle behind, which continued to breed and within a short time had formed immense wild herds.

On their part the Indians, recognizing the benefits to be derived from the new animals and plants, ere long began to pay their tributes in wheat and cattle. The immensity of excellent grazing lands was a potent aid in the breeding and dissemination of animals; while plants, in addition to human agency (both of Spaniards and natives) were often spread by birds and in other ways.



James Sprunt Historical Studies, Cont'd

Transfer and Spread Of Animals.

The American Indies were astonishingly bare of domestic animals. Dogs of questionable breeds, and cats, were not rare, and there were some wild pigs. The wild buffalo or American bison roamed the plains of North America; in South America, the Indians had tamed the vicuna and llama. But horses and domestic cattle were unknown. Columbus, himself, took the first horses to Isla Espanola in 1493. Ponce de Leon, Narvaez, Soto, and Luna y Arrelano had horses in their expeditions to Florida. Cortes took this friend of man to Mexico, where the awestruck natives thought it some sort of powerful god; Pizarro, to Peru; and Coronado, into the southwest. There is no doubt that horses aided very materially in the conquest.

In the first years of the conquest, it was common to pay from 3,000 to 4,000 pesos for a horse, but they bred so rapidly in the New World that the price dropped very materially within a comparatively short time. Very soon also some horses escaped into the wilds where they quickly reverted to a wild state forming as seen above immense herds. Wild herds were no uncommon sight in Isla Espanola, and they rose to uncommon proportions in the colonies of Paraguay and Tucuman. The immense herds that roamed through our own western country are too well known to need more than mention. These also were often the descendants of horses that escaped from the conquistadores. In Cobo's time the best horses came from Chile, where they had been introduced from Peru.



James Sprunt Historical Studies, Cont'd.

Shortly after their permanent entrance into the Philippines (1565), the Spaniards also took horses thither, but the sturdy Chinese horse had been there for many years. The small ponies that are capable of drawing such extraordinarily large loads are descended from the Spanish horses (often Arabs or mixed with Arab) and the Chinese horse.

The first cattle were taken to Isla Espanola at the beginning of the conquest, and to Peru three or four years after Pizarro's entrance. Like the horse, some of them escaped into the wilds and before long they too were formed into large herds in various regions. Indeed, wild cattle were so numerous in Isla Espanola and other West Indian islands, that it was found profitable to kill them for their flesh and hides. The men who made this their business, most frequently English, Dutch, or French, though the scourings of many other nations gradually drifted into the seas of the Indies, were known boucaniers, a word derived from an old Indian term, boucan or buccan, meaning the method of drying or smoking the meat; and since the piratical crews which scurried along, the Spanish main during the sixteenth and seventeenth centuries were usually recruited from these men, the term "buccaneer", meaning pirate came into the English language. Acosta notes that in 1587, a single fleet carried over 64,000 hides to Spain. The pirate Esquemelin noted the large number of wild cattle in Isla Espanola and says that the bulls found there were of huge bulk.

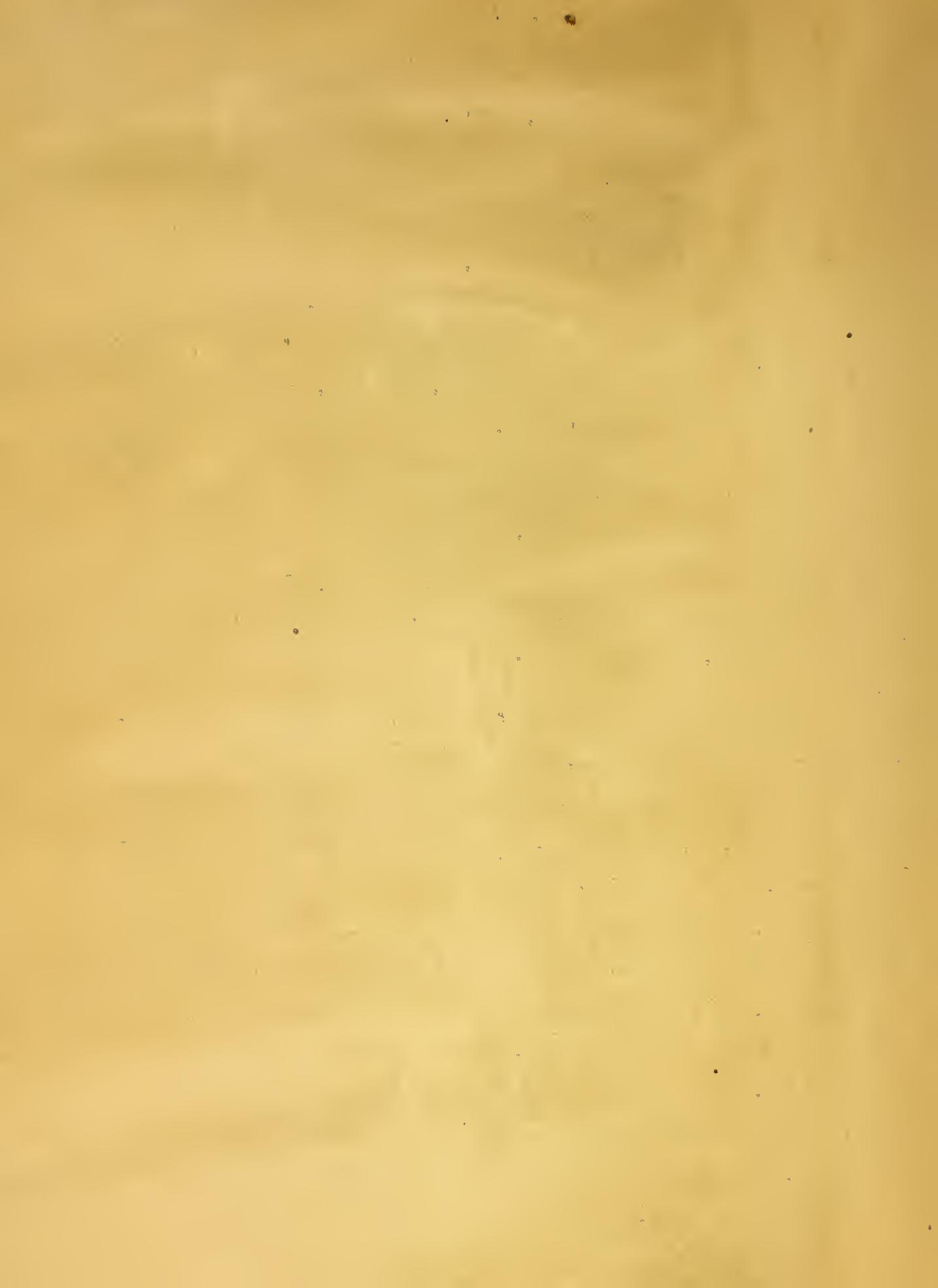


James Sprunt Historical Studies, Cont'd.

The first asses in the New World were taken to Isla Espanola, whence they spread into other regions, being taken to Peru by Captain Diego Maldonado who obtained them in Jamaica. But most likely because of the abundance of horses throughout the Indies, neither asses nor their hybrid offspring, the mules, were very abundant in America in Cobo's time.

However, asses could be procured in Lima for prices ranging from 10 to 15 pesos; while mules, which were very dear in early days could be had at reasonable figures in Cobo's time. Work mules fetching only 30 to 40 pesos, riding mules, 60 to 100 pesos, and choice animals, 200 to 300 pesos.

The New World had various kinds of wild, but no domesticated pigs. Because of their food value, the early conquistadores were accustomed to take large droves of European swine with them on their explorations and entradas, as, for instance, did Pizarro to Peru in 1531 and slightly later, Soto to Florida. Only four years after Pizarro's entrance into Peru, a slaughter house was erected in Lima, the first meat to be sold therein being pork. A decree of the cabildo of Lima, dated August 14, 1536, ordered that a pig be killed daily and the meat sold for twenty reals per arroba, and that no other animals were to be killed. In the middle of the seventeenth century pigs could be bought for eighteen pesos in Lima and even more cheaply in other places. Lard had a steady sale and the rendering of it was a fairly profitable business.



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Sheep, when transferred from Spain to the warm regions of America (and the same was true of the transfer to the Philippine Islands), did not thrive well. Later, however, it was found that those reared in the highlands of Peru and in Chile fared better, and in those localities it was not long after their introduction before the woolen goods made from their fleece were able to compete with those of Spain. The Spaniards also early took goats and rabbits to the new lands, as well as dogs, although the Indians had plenty of the latter, albeit of poor breeds. The European dogs were used in tracking the poor Indians who fled before the cruelty of their self appointed masters, and many a victim fell before the ferocity of the great hunting mastiffs and bloodhounds. The classic example of the dog in the early days of American colonization was the animal used by Juan Ponce de Leon in his conquest of Porto Rico, which shared like and like with the soldiers in all booty and wages. Pizzaro took dogs to Peru, and Soto to Florida. Las Casas, the Apostle to the Indians, speaks in scathing terms of the cruelty of the dogs and the curious reader will find many interesting pictures of the dog in the great works published by Theodore de Bry in the latter part of the sixteenth century. There were instances of the dog reverting to a wild state, and Esquemelin mentions the great, wild dogs of Isla Espanola descended from those brought in by the Spaniards.



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So much at this time for animals. Enough has been said to show that Spaniards were not insensible to the benefits to be derived by introducing them into their colonies. In their turn Portuguese, French, and English also introduced animals into their colonies, but the first beginnings came from Spain.

Introduction of Plant Life.

It was quite natural for the Spaniards on coming to their new lands to look for the plant life to which they had been accustomed; and not finding it, to attempt to introduce it, both to remind them of the land of their birth and to serve as food and for other uses. It was also quite natural for them to transfer the plant life of the colonies to Spain or from one colony to another, but with this phase of transfer we have no concern in the present article. In bringing seeds, roots, and slips from the mother country, it is not surprising that many difficulties were encountered, for methods of packing were generally crude, and in the long voyages in their insecure ships, it was not uncommon for everything to be drenched with seawater, while the intense heat as they entered the tropics caused many of the seeds to rot. The story of the transfer of wheat, for instance, is a thrilling one. Various attempts to bring seed had failed, and it seemed impossible to bring the seed alive to America. At last however, what it seemed impossible to accomplish by design, was brought about by pure accident. It is recounted that a negro slave of Cortes, while



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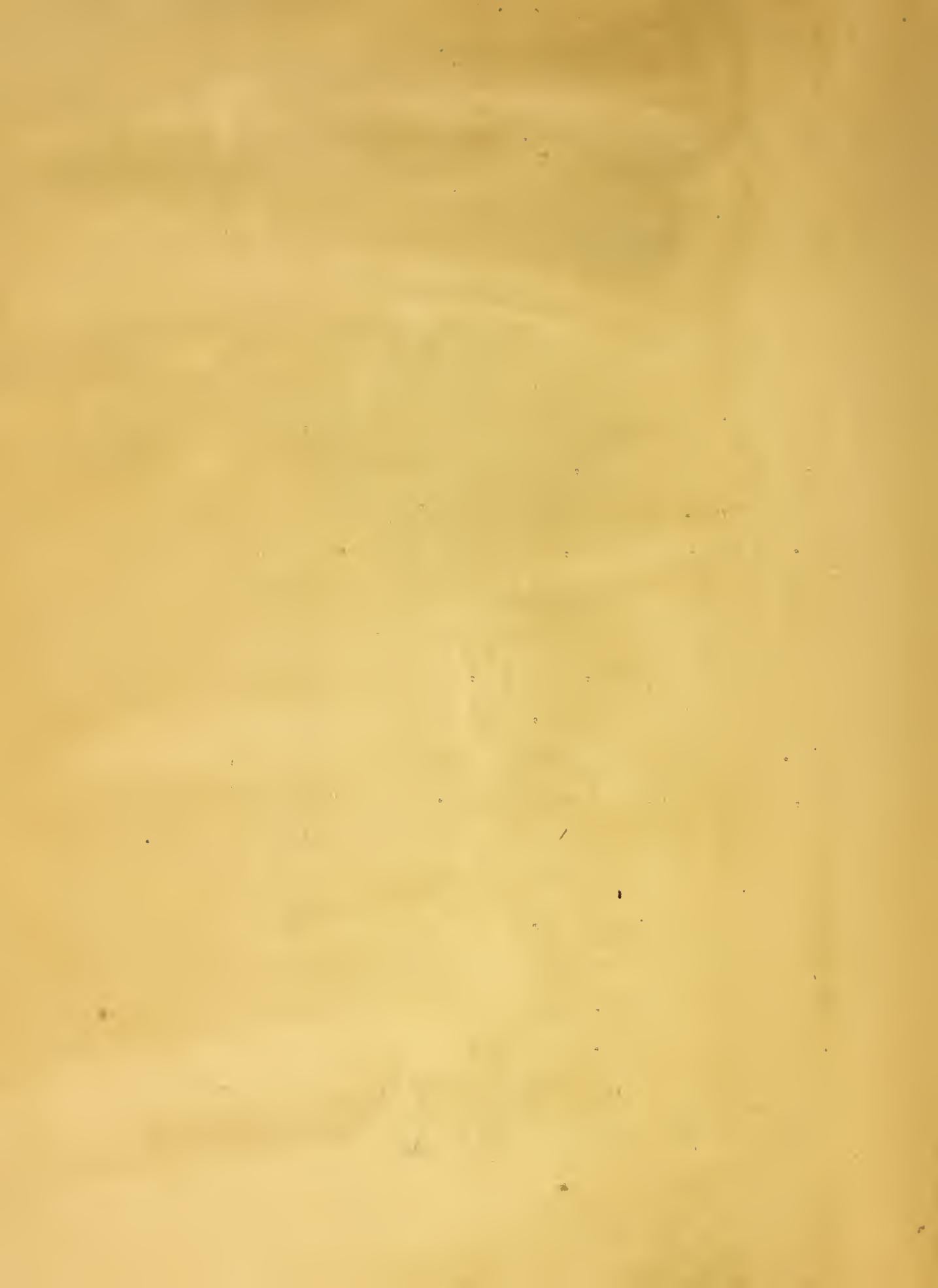
preparing rice for the expeditionaries one day, discovered several grains of good wheat. These were planted in New Spain and grew, and the resultant grains were also planted. In due time, the harvest was sufficient for use. A similar story is told of the introduction of wheat into Peru. Dona Inez Munoz, wife of Martin de Alcantara--one of the conquistadores who had come to Peru with Pizarro---one day in 1535 while cleaning rice to make some soup for the family meal, found a few grains of good wheat in the rice barrel. Since she was much interested in transferring Spanish products to the new possessions, she recognized the value of her discovery. Accordingly, she planted the grains in her garden. What a gala day that must have been when the first shoots appeared above the ground, for the wheat grew rapidly and yielded abundantly. For several generations the harvest was in turn planted and in 1539 the first flour mill was erected in Peru. Next year, the cabildo of Lima regulated the sale of flour, and on November 19, 1541, bread was sold at one real for two and one-half libras (pounds). Other grains, including barley and rice, were early planted in Peru and flourished. Many of the common vegetables not found in America were also among the European products early transferred to the colonies. But of paramount interest, equal or nearly equal, in importance to wheat, as they were used also in the daily household economy of the colonists, were the vine, the olive, and the sugar cane, none of which (with the exception of a few



James Sprunt Historical Studies, Cont'd.

varieties of wild grapes which were not cultivated at all by the Indians and which were small and sour) were found in America.

The first cultivated seed or slip of the vine was taken to Lima by Hernando de Montenegro, and so rapid was the development that by 1551 grapes were being gathered in abundance. In that year, being placed on sale, under the auspices of Licentiate Rodrigo Nino, they brought half a peso oro or 225 maravedis per libra. However, Montenegro, to whom the grapes belonged, considered this price too low and appealed to the audiencia of Lima asking that he be permitted to sell at a higher rate. So greatly were the first plants esteemed, says Cobo, that it was necessary to have them guarded by armed men, so that the shoots should not be stolen. The first vines taken from Peru to Chile sold at 3,000 pesos, and the shoots at 100 pesos each. In Cobo's time there was an annual export from Peru of more than 100 shiploads of grapes. The price of the wine made from the grapes dropped to as low as three to four pesos per arroba. As time passed most of the Spanish varieties of grapes were transferred to Peru and flourished; and as might be expected, found favor not only with the whites but with the Indians as well. The Jesuit Joseph de Acosta, writing much earlier than Coco, bears similar testimony of the vine, but says that this most useful product did not thrive in Tierra Firme or



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in the islands. The vines bore well in New Spain, however, but the grapes were there used only for eating, no wine being made, because as Acosta conjectures, the grapes did not ripen thoroughly on account of the rains of July and August. On the other hand, he says, excellent wine was made in Peru and Chile; and so great was the increase in those regions that the tithes of the church increased five or six times within twenty years.

The olive was first brought to Peru by Antonio de Ribera, one of the principal settlers of that country. Having been sent to Spain as procurator for the new colony, on his return in 1560, he brought many olive plants from Seville, but only two or three survived the voyage. Planting these in his garden he had them carefully guarded against theft by Indians and dogs. Notwithstanding his care, however, all the plants except one were stolen one night, and taken to Chile where being planted they thrived exceedingly. The one left to Ribera became the parent of all the trees in Peru, and in Cobo's time was still living although the garden in which it had been planted had been transferred to a community of nuns.

There is an interesting story in connection with this parent tree. Upon the occasion of a solemn procession held on a holy day, Don Antonio cut a small branch from his remaining olive plant, which he placed on the float on which reposed the most holy sacrament. As the float passed through the mass of worshipers, many coveted the branch; but one of the ecclesiastics, Bartolome Leones by name, took possession of it, and gave it to one Guillermo Guillen, an inhabitant of Lima much interested in agriculture, telling him to plant it and



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watch it carefully and when the time to bear came they would share equally in the profits. Guillen, whose garden contained many of the earliest plants brought from Spain, made haste to plant the branch near the spot where was later built the Franciscan convent. The olive sprouted and under his fostering care grew into a fine tree, even maturing ahead of the parent tree from which it had been cut. Thereupon, with canny foresight, Guillen obtained full title to the tree by giving the ecclesiastic a bar of silver for his share, and when this bargain was consummated, began to sell slips from it, and to plant a large grove for himself. The sale of slips alone netted him some three or four thousand pesos. However, the rapidity and facility with which the olive reproduced speedily brought down the price of the product and slips to a low figure, and groves sprang up in all parts of the country. In certain localities, visited seldom or never by rain, it was grown from the first under irrigation. The product was so good that in many places it was preferred above the Spanish olive. Oil was early expressed and sold for a low price.

Sugarcane was first brought to the West Indies by Pedro de Atienza, an inhabitant of Concepcion de la Vega in Isla Espanola, and from this place it spread all over the tropical Indies redeeming much territory that had been considered as only waste. The product was larger than in its former home, and grew so abundantly that sugar was made in great quantities and soon became very cheap, costing only four or five pesos per arroba. In Peru, notwithstanding the heavy



James Sprunt Historical Studies, Cont'd.

consumption of sugar, there was a considerable export to Spain.

The first sugar in the Indies is said to have been made by Gonzalo de Vibora, who brought over sugar experts to Isla Espanola, and who erected a horse mill for expressing the juice. "To him alone," says Oviedo, "are due thanks for the first manufacture of sugar in America." So rapid was the development of sugar growing that despite the heavy capital needed to run a mill because slave labor only was employed, many sugar mills were early established, among mill owners being Luis Colon, Cristobal de Tapia, Miguel de Pasamonte, Lucas Vasquez de Ayllon, and many others whose names are familiar. Until sugar became an object of export, ships had to return to Spain in ballast. In 1553, so much sugar was made in Mexico that heavy exports were made from Vera Cruz and Acapulco to Spain and Peru. One shipment of sugar to Spain before 1590 amounted to 898 boxes, each presumably of 8 arrobas' weight, and this notwithstanding the heavy consumption in the Indies. Sugar, indeed, became the chief product of the West Indian islands, and its abundance created a great demand for confections of various kinds.

Among other food products introduced were date palms, which were planted in Peru soon after the founding of Lima. The dates, however, were not equal to those of Spain. Figs were first planted half a league outside of Lima by one of the early conquistadores and soon became plentiful. Pomegranates were early introduced into Peru



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and grew well, but the fruit, though good, was small, they flourished also in Tierra Firme.

Among other fruits bearing well before 1600 in various parts of the Indies were apples, pears, plums, peaches, apricots, quinces, mulberries, oranges, lemons, limes, and other citrus fruit. Little success was had, however, with cherries, although they were induced to grow in a few places. Quinces were widespread but flourished especially in New Spain. Melons were found in abundance in Tierra Firme and parts of Peru.

Oranges and lemons spread so rapidly that it early became not uncommon to see them growing wild in Isla Espanola. Acosta, indeed, says that whole forests of wild oranges were found growing in many localities. The first oranges (both sweet and sour varieties) were taken to Isla Espanola from Spain, and thrived wonderfully both inside the city of Santo Domingo and in other parts of the island, and spread very soon to the other islands. The first oranges were taken to Peru by Baltasar Gogo and planted in a garden not far from Lima. Lemons were unknown in Peru when Cobo first went there, but when he wrote they had been flourishing for a score of years.

The mulberry was introduced into the New World by Hernando Cortes, who tried to establish the silk industry in New Spain. The first bananas in the New World, according to Oviedo were planted in Isla Espanola in 1516 by Tomas Berlangas, a Dominican priest,



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who is said to have brought them from the Canary Islands, but Acosta says that they had been known in America before the arrival of the Spaniards. Cobo is probably in error in his assertion that the first bananas were planted Tierra Firme, but probably correct when he says that the first ones were taken to Peru by a lady of Panama who went to that country.

With regard to the plant life of the New World, Candolle says that of 247 plants cultivated in America, 199 originated in the Old World, 45 in America, 1 in Australia, while the native habitat of 2 cannot be determined. It might be well in this connection to repeat Humboldt's warning, lest we get to believing that the New World was poorer in useful plant life than was really the case. He says:

"In general, if one considers the garden plants of the Aztecs and the great number of farinaceous and sugar roots cultivated in Mexico and in Peru, he will see that America was not nearly so poor in food plants as would appear from the untrustworthy evidence advanced by certain savants, who know the new continent only through the works of Herrera and Solis."

And he notes further that, before the arrival of the Spaniards in America, Mexico and the Cordilleras of S. America produced several



fruits quite similar to those of the temperate climate of the old continent.

On the other side of the globe, the Spaniards transferred various products to the Philippine Islands, both from the American Indies and from Spain. This story may not be taken up in any detail in this paper. Suffice it to say that Miguel Lopez de Legazpi, who made the first permanent Spanish settlement in the Philippines (that at Cebu), in writing his official report of 1565, states that the soil was so fertile that four days after the Spanish forces had taken the native town in Cebu, "the Castilian seeds had already sprouted."

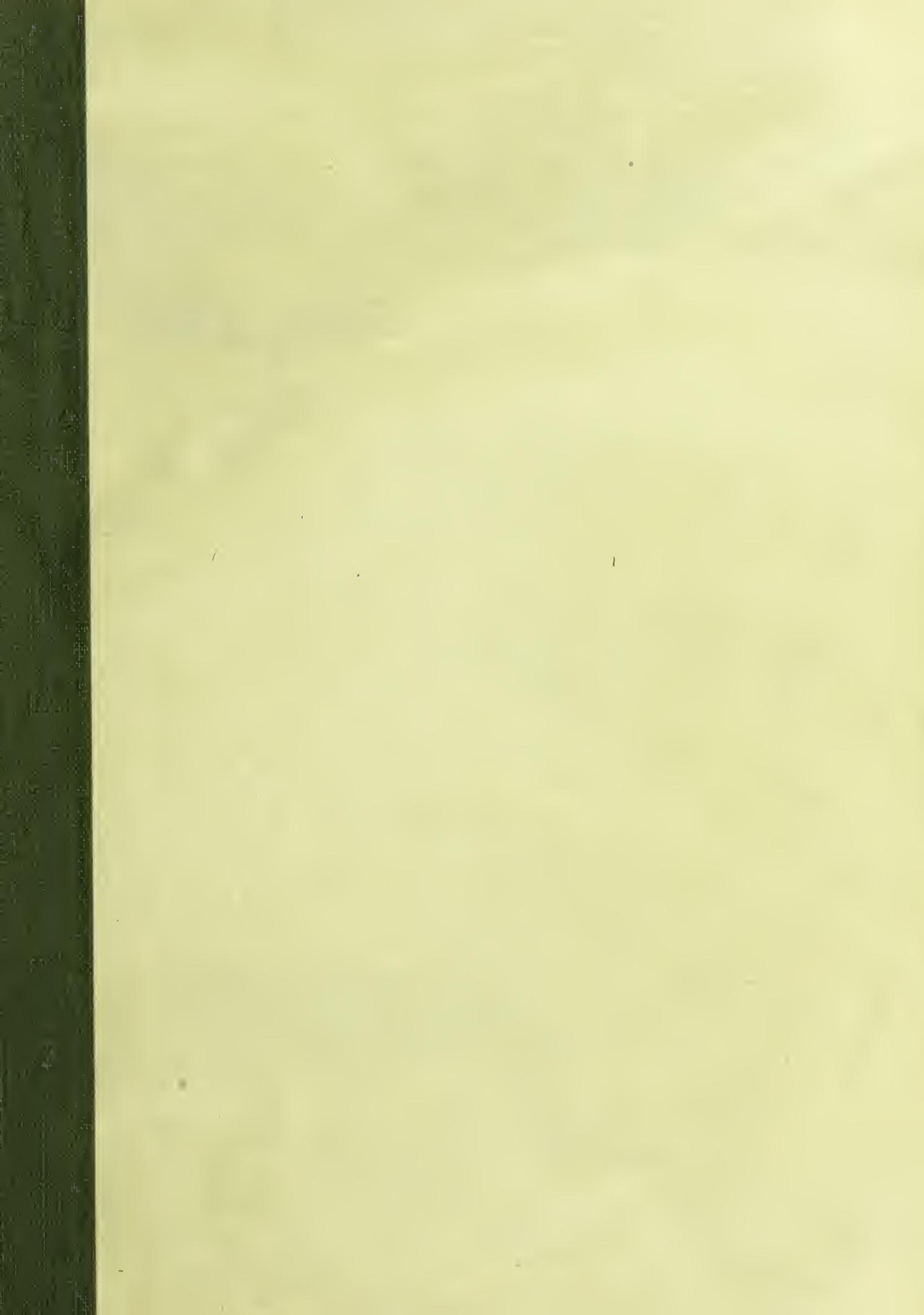
Whatever mistakes the Spaniards made in their colonization of their new possessions, whether in the western or eastern hemisphere, one can indorse much of what Claudio Gay says, namely:

Never has a nation carried the colonizing spirit to a degree as high as the Spaniards. Although many of them expatriated themselves with the sole object of enriching themselves at any price, the majority had the firm resolution to contribute to the civilizing and evangelizing of semi-barbaric peoples. With this object they carried with them, not only the principal elements of civilization, such as domestic animals, wheat, beans, vegetables, etc., but also a force of goodwill and of perseverance truly wonderful which naught could change."









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